

In the Claims

Claims 1-34 (Cancelled).

35. (Currently amended) A method of forming an aluminum comprising line having a titanium nitride comprising layer thereon, the method comprising:

providing a substrate having an opening extending through an insulating layer to a diffusion region;

in a processing tool, physical vapor depositing a first layer comprising at least one of elemental aluminum or an aluminum alloy over the substrate in a first chamber, the first layer being formed over the insulating layer and filling the opening, at least an outermost portion of the first layer being deposited at a first deposition temperature of at least 400°C;

physical vapor depositing a titanium alloy on the first layer in a second chamber of the processing tool while at least an outer portion of the first layer is at a temperature of at least about 360°C, and forming therefrom a second layer comprising an alloy of titanium and the aluminum from the first layer in the second chamber during said depositing, the alloy having a higher melting point than that of the first layer, and wherein essentially all the physical vapor deposited titanium alloys with the aluminum of the first layer during the depositing, the outermost portion of the first layer sustaining a temperature of at least 360°C between the depositing the first layer and the depositing the titanium alloy on the first layer;

physical vapor depositing a third layer comprising titanium nitride on the second layer;

removing the substrate from the processing tool after depositing the third layer; and photopatterning the first, second and third layers into a conductive line over having a contacting plug within the opening and in electrical connection with the diffusion region.

36. (Previously presented) The method of claim 35 comprising depositing the second layer to have a thickness of from about 50 Angstroms to about 150 Angstroms.

37. (Previously presented) The method of claim 35 comprising depositing the second layer to have a thickness of from about 100 Angstroms to about 200 Angstroms.

38. (Previously presented) The method of claim 35 wherein the first layer consists essentially of elemental aluminum, an aluminum alloy, or a mixture thereof.

39. (Previously presented) The method of claim 35 wherein the first layer consists essentially of elemental aluminum.

40. (Cancelled)

41. (Previously presented) The method of claim 35 wherein temperature of at least an outer portion of the first layer is at least about 360°C during the physical vapor depositing of the third layer.

42. (Previously presented) The method of claim 35 wherein the third layer physical vapor depositing occurs in the second chamber of the processing tool.

43. (Previously presented) The method of claim 35 wherein the physical vapor depositing of the titanium alloy on the first layer in the second chamber of the processing tool forms a second layer comprising an alloy of titanium and the aluminum from the first layer in the second chamber during said depositing.

44. (Previously presented) The method of claim 35 wherein the first deposition temperature is at least about 450°C.

45. (Previously presented) The method of claim 35 wherein the first deposition temperature is greater than 450°C.

46. (Previously presented) The method of claim 35 wherein after the first layer physical vapor depositing and before beginning the physical vapor depositing of the titanium alloy, letting the outermost portion of the first layer cool from the first deposition temperature by 25°C or less.

47. (Previously presented) The method of claim 35 wherein the first deposition temperature is at least about 450°C, and wherein after the first layer physical vapor depositing and before beginning the physical vapor depositing of the titanium alloy, letting the outermost portion of the first layer cool from the first deposition temperature by 25°C or less.

48. (Previously presented) The method of claim 35 wherein the first deposition temperature is greater than 450°C, wherein after the first layer physical vapor depositing and before beginning the physical vapor depositing of the titanium alloy, letting the outermost portion of the first layer cool from the first deposition temperature by 25°C or less.

Claims 49-74 (Cancelled).

75. (Currently amended) The method of claim 35 further comprising:
~~providing an insulative material over the substrate;~~
~~forming a contact opening within the insulative material;~~
prior to depositing the first layer depositing a wetting layer within the contact opening; and
wherein the depositing the first layer over the substrate comprises depositing the first layer over the wetting layer.